UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/621,356	07/18/2003	Tae-Kyun Kim	030681-544	2575

21839   7590   04/18/2007
BUCHANAN, INGERSOLL & ROONEY PC
POST OFFICE BOX 1404
ALEXANDRIA, VA 22313-1404

EXAMINER
STREGE, JOHN B

ART UNIT	PAPER NUMBER
2624	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/18/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

	Application No.	**Applicant(s)**
Office Action Summary	10/621,356	KIM, TAE-KYUN
	Examiner	**Art Unit**	
	John B. Strege	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>18 July 2003</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-20</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-3,6-12 and 15-20</u> is/are rejected.

7)☒ Claim(s) <u>4,5,13 and 14</u> is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>18 July 2003</u> is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All b)☐ Some * c)☐ None of:

        1.☒ Certified copies of the priority documents have been received.

        2.☐ Certified copies of the priority documents have been received in Application No. _____.

        3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date <u>5/6/05</u>.

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

2.   Claims 1-3,6-12, and 15-20 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Huang et al. USPN 6,944,319 (hereinafter "Huang") in view of Sung

et al. *Example-Based Learning for View-Based Human Face Detection* (hereinafter

"Sung").

Huang discloses a method of detecting a face using a pattern classifier having

learned face images, the method comprising the steps of: (a) receiving a plurality of

face images and extracting a plurality of face basis vectors expressing the face images

(col. 3 lines 12-20) (b) extracting face feature vectors by projecting the face images

upon the face basis vectors (col. 3 lines 20-24); (c) classifying the face feature vectors

into predetermined subclasses (col. 4 lines 36-42); (d) training each pattern classifier

corresponding to a certain sub-class using face feature vectors which are included in

the subclass (col. 3 lines 25-35); and (e) extracting a feature vector of an image, which

is input for face detection, applying the feature vector of the input image to a pattern

classifier corresponding to a sub-class including the feature vector of the input image,

and determining whether the input image is a face using the pattern classifier (col. 3 lines 35-44).

Although Huang discloses doing this procedure for face images he does not explicitly disclose that it is done for near-face images as well.

Sung discloses a facial detection system that is advantageous over typical facial detection training algorithms because it trains a decision procedure on a sequence of face and nonface examples, to empirically discover a set of operating parameters and thresholds that differentiates face patterns from non-face patterns (section 1.3 beginning on page 40). This is advantageous because the resulting system can be made robust by increasing the size and variety of its training examples. Both false positive and false negative detection errors can be easily corrected by further training with the wrongly classified patterns. And the system can be trained to detect human faces over a wider range of poses (point number 3 of section 1.3).

Huang and Sung are analogous art because they are from the same field of endeavor of facial detection and pose estimation.

At the time of the invention it would have been obvious to one of ordinary skill in the art to incorporate the teaching of Sung to use face and non-face examples in the training of the system. The motivation would be to make the system more robust to detect human faces over a wider range of poses. Thus it would have been obvious to one of ordinary skill in the art to combine Huang and Sung to obtain the invention as specified in claim 1.

Regarding claim 2, Huang discloses that each extracted face region associated with a person that it is desired to identify is then prepared in a way similar to the regions extracted from the model images and input into the neural network ensemble one at a time (col. 3 lines 38-42).

Regarding claims 3 and 6, Sung discloses finding a difference feature vector between the local image pattern and the distribution based model (see at least the abstract).

Regarding claim 7, Sung discloses using a distance metric that is Euclidean to partition the data samples into clusters (section 3.3).

Regarding claim 8, Sung discloses measuring a Euclidean distance (section 3.3).

Regarding claim 9, Sung discloses a clustering algorithm (section 3.3).

Regarding claim 10, the method of Huang and Sung are carried out on a computer.

Claim 11 is similarly analyzed to claim 1.

Claim 12 is similarly analyzed to claim 1.

Claim 15 is similarly analyzed to claim 3.

Claim 16 is similarly analyzed to claim 7.

Claim 17 is similarly analyzed to claim 8

Claim 18 is similarly analyzed to claim 9.

Claim 19 is similarly analyzed to claim 10.

Claim 20 is similarly analyzed to claim 1.

Allowable Subject Matter

3.   Claims 4-5, and 13-14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John B. Strege whose telephone number is (571) 272-7457. The examiner can normally be reached on Monday-Friday between the hours of 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta can be reached on (571) 272-7453. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Art Unit: 2624

JS

BHAVESH M MEHTA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600